RECEIVED
CENTRAL FAX CENTER
FEB 16 2007

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method of depositing a layer on a substrate, comprising:

determining a target process condition selected from a target ionization voltage, a target pressure, and a target resistivity, within a chamber of an expanding thermal plasma generator for plasma enhanced chemical vapor deposition of a coating on a substrate; the generator comprising a cathode, replaceable cascade plate and anode with concentric orifice; and

replacing the cascade plate with another plate having a configured orifice to effect the identified target process condition; and

generating a plasma at the target process condition by providing a plasma gas to the plasma generator and ionizing the plasma gas in an arc between cathode and anode within the generator and expanding the gas as a plasma onto a substrate in a deposition chamber.

2. (cancelled)

3. (original) The method of claim 1, comprising determining a target ionization voltage applied to the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target ionization voltage.

4. (original) The method of claim 1, comprising determining a target ionization voltage applied to the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured with a straight wall length to effect the target ionization voltage.

5. (original) The method of claim 1, comprising determining a target pressure of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target pressure.

6. (original) The method of claim 1, comprising determining a target pressure of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured with a straight wall length to effect the target pressure.

7. (original) The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator.

8. (original) The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator, determining a target resistivity for the plasma and replacing the cascade plate with another have having an orifice configured to effect the target resistivity.

9. (original) The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator, determining a target resistivity for the plasma and replacing the cascade plate with another having an orifice configured with a straight wall length to effect the target plasma resistivity.

10. (original) The method of claim 1, wherein the another cascade plate orifice has a length of 1mm to less than 20 mm.

11. (original) The deposition apparatus of claim 1, wherein the another cascade plate orifice has a length of 1.5mm to 10mm.

12. (original) The deposition apparatus of claim 1, wherein the another cascade plate orifice has a length of 2mm to 8mm.

13. (original) The method of claim 1, wherein the substrate is a thermoplastic substrate.

14. (currently amended) The method of ~~claim 1~~ claim 13, wherein the thermoplastic is a polycarbonate.

15. (original) The method of claim 1, wherein the plasma is an argon or argon-oxygen-organosiloxane plasma.

16 (original) The method of claim 1, wherein the plasma is generated to deposit successive coatings on the substrate.

17. (original) The method of claim 1, wherein the substrate is planar.

18. (original) The method of claim 1, wherein the substrate is curved.

19. (withdrawn) A deposition apparatus for generating a controllable plasma; comprising:

a deposition chamber; adapted to be maintained at subatmospheric pressure;

an article support within the deposition chamber;

an expanding thermal plasma generator comprising a cathode, a single cascade plate and an anode and a communicating orifice through the cascade plate, the orifice having a length of 1mm to less than 20 mm.

20. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate orifice has a length of 1.5mm to 10mm.

21. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate orifice has a length of 2mm to 8mm.

22. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate orifice diameter changes radially symetrically in the flow direction.

23. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate orifice diameter changes radially assymetrically in the flow direction.

24. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate exiting orifice diameter, and the anode entering orifice are matched..

25. (withdrawn) The deposition apparatus of claim 19, further comprising a port for introducing reagents into the plasma .

26. (withdrawn) The deposition apparatus of claim 21 wherein the reagents are introduced through a ring, nozzle, flash evaporator, nebulizer, or evaporator.

27. (withdrawn) The deposition apparatus of claim 19, wherein the cascade plate is held in place by a threaded rod and nut combination traversing a cathode adjustment ring, cathode housing , cascade plate and anode.

28. (withdrawn) The deposition apparatus of claim 19, comprising multiple expanding thermal plasma generators arranged to cover an extended area.

29. (withdrawn) The deposition apparatus of claim 19, comprising multiple expanding thermal plasma generators arranged with different cascade plates to effect uniform properties on substrates.

30. (withdrawn) The deposition apparatus of claim 19, wherein multiple expanding thermal plasma generators arranged with different cascade plates to effect different properties on flat substrates.

Claims 31-40 (cancelled)

41. (withdrawn) An article produced by the method of claim 40.